5 STEPS OF CONCRETE SLAB REPLACEMENT

TAILGATE CHECKLIST

Please mark the box for each item as you complete it and fill in notes section as needed. For additional questions, please contact the Translab at (916) 227-7230.

STEP 1: REMOVING CONCRETE SLABS

NIGHT WORK

- ❑ A. Prepare yourself and your staff for night work, if necessary
- ❑ B. Provide adequate lighting for night work

DETERMINE EXACT LIMITS OF CONCRETE PAVEMENT REMOVAL

- ❑ A. Locate and clearly mark or number slabs to be removed

PRE-SAWING SLABS, ISOLATE THE AREA

- ❑ A. When planning to pre-cut concrete slabs:
  1. Review the existing condition of the slabs to determine whether the pre-cut slab will hold up under traffic until it is replaced
  2. Avoid keeping the pre-cut area open to traffic for more than 2 days, as this will cause more pavement deterioration
  3. Slabs may have to be cut in the same shift they are replaced
- ❑ B. Core to determine saw cut depth and quantity
- ❑ C. Outline of concrete to be removed shall be sawed full depth with a power driven saw
- ❑ D. Cut slab to sizes that can be lifted with selected equipment
  1. Remove the concrete in rectangular sections to simplify concrete removal
  2. Do not make notches or diagonal cuts in the pavement
  3. Water residue from concrete cutting shall be vacuumed immediately

CONCRETE PAVEMENT REMOVAL

- ❑ A. Non-impact liftout method
  1. Each slab shall be removed in one or more sections without disturbance or damage to the underlying base or the surrounding pavement that remains in place
  2. Slabs can be pre-sawed prior to the night of removal and replacement
  3. DO NOT drop concrete onto the existing base when lifting out
- ❑ B. Possible problems during removal
  1. Slab is thicker than shown on the plans and pre-sawing did not reach full depth
  2. Water is present under the slab when concrete is removed (Use shop vac to remove water)
  3. Slabs shatter when lifted
  4. Lift pins fail to hold PCC pavement section (redrill hole)

Notes:

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STEP 2: PREPARING BASE AND PAVEMENT JOINTS

BOND BREAKER

- ❑ A. Suitable plastic sheeting, 6 mil thick, shall be placed between the replacement pavement and the base for full-depth repairs; for full-depth and treated base repairs, suitable plastic sheeting shall be placed on the subgrade or subbase layer immediately prior to concrete placement
- ❑ B. Repair damage to base with cold patch. Damaged areas that are 1" or deeper need to be filled to make a level base

CONTACT JOINTS

- ❑ A. Transverse or crosswise contact joints
  1. The expansion material shall be secured to the face of the existing pavement joint by any method that will hold the expansion material securely in place during concrete placement; concrete shall not be allowed to get between the expansion material and existing PCC pavement
  2. A 6-mm- (1/4-in-) thick foam expansion material must be placed securely across the transverse joint face and extend the full depth of the joint, with the top of the expansion material flush with the top of the pavement
- ❑ B. Longitudinal or lengthwise contact joints
  1. Expansion materials are not required along the longitudinal contact joint for isolated pavement slab repairs
  2. Expansion material used along longitudinal contact joints must be placed securely across the entire length of the joint and extend the full depth, with the top of the expansion material flush with the top of the pavement joint
  3. Expansion material along each of the joints must meet at the slab corners without any gap

Notes:

STEP 3: SELECTING CONCRETE

CONCRETE MIX QUANTITY FORMULA

$$\text{Quantity} = \frac{\text{Slab Length} \times \text{Slab Width} \times \text{Slab Depth}}{27} + 10\%$$

CONCRETE MIX PROPERTIES

- ❑ A. 400 PSI flexural strength at the time of opening to traffic
- ❑ B. 30 minutes workability after concrete comes down the chute

CONCRETE MIX TICKET ITEMS

- ❑ A. 8 - 8.5 sacks of cement per cubic yard
- ❑ B. 0.3 - 0.35 : 1 water cement ratio
- ❑ C. A super plasticizer
- ❑ D. A set retarder
- ❑ E. An accelerator

If you have any questions regarding the concrete specification contact Doran Glauz, Senior Concrete Specialist at the Translab. He can be reached at (916) 227-7272.

Notes:

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STEP 4: PLACING CONCRETE

CONCRETE ARRIVES ON-SITE

- ❑ A. Check temperature
- ❑ B. Watch for consistency of concrete, how long is the material workable, what type of slump does it have, etc.
- ❑ C. Watch for concrete balls coming down the chute and remove them
- ❑ D. Ensure that the vibrator keeps up with the concrete placement
- ❑ E. Ensure that final finishing is keeping up with concrete placement

CONCRETE TESTING

- ❑ A. Measure in-place temperature of the new concrete slab

POTENTIAL ISSUES

- ❑ A. Cold joints
  Check temperature of discharging concrete from ready mix truck to ensure it doesn't set faster than it can be finished
- ❑ B. Low concrete slumps
  1. Concrete should be delivered to the job with a slump specified by the approved mix design (the average is 102 to 204 mm or 4 to 8 in)
  2. Too low a slump can cause difficulty in placing and finishing
  3. Do not add water to adjust slump. A type F chemical add mixture, or super plasticizer, may be added to adjust slump

Notes:

STEP 5: OPENING LANES TO TRAFFIC

CURING CONCRETE SLABS

- ❑ A. Apply curing compound after brooming
- ❑ B. Cover slabs with visquine or insulated blanket (cold weather)

PROTECTING NEWLY PLACED SLABS

- ❑ A. Protect slabs so that vehicles will not drive on them
- ❑ B. Place "WET CONCRETE" signs on barricades. It is also recommended to place cones around the entire perimeter of the replaced slabs

WEAKENED PLANE JOINTS

- ❑ A. Sawing of weakened plane joints shall be completed as soon as the concrete will support the saw (refer to Caltrans Specification 40-1.08 B (1))
- ❑ B. The minimum depth-of-cut for the weakened plane joint shall be D/3, where D is the slab depth

CLEAN-UP & OPENING TO TRAFFIC

- ❑ A. A street sweeper is recommended for clean-up
- ❑ B. Open freeway lanes to uncontrolled traffic when the slab temperature reaches 120℉ (49℃)
- ❑ C. If the slab temperature has not reached 120℉ after 4 hours, place a changeable message sign one mile before slab replacement that reads "TRUCKS USE LEFT LANE NEXT 2 MILES"

Notes: